

*POLINARES is a project designed to help identify the main global challenges relating to competition for access to resources, and to propose new approaches to collaborative solutions*

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# Taxonomy of risks in access to oil, gas and minerals

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### **3. Taxonomy of risks in access to oil, gas and minerals**

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#### **1. Introduction**

At the outset we offer two clarifications as to what we attempt when we undertake a short taxonomy of risks:

- Firstly, given that the whole of POLINARES aims to deal with constructive, economically efficient competition and collaboration in access to resources as much as avoidance of conflict or harmful competition over access, consideration needs to be given to opportunities alongside risks; though – without treading at this stage into the realm of policy formulation, as that would go beyond the scope of WP3 and WP4.
- Secondly, it is possible that the key risks (identified below and discussed further in WP4) may differ substantially in relation to hydrocarbons when compared with minerals. It is more likely that the risks will be somewhat similar in the case of more common, generally used, commoditised minerals and perhaps completely at variance where the trade and supply of particular minerals (some discussed in WP2) are not subject to open market spot and futures dealing of the type generally characterising commodity transactions. It is also possible that risks and opportunities will differ significantly as between crude oil on the one hand and other hydrocarbons such as natural gas and coal on the other. Fundamental risks tend to feature in any investment or major supply deal of any description, but the importance of risks and strategies for their mitigation will inevitably differ depending on the structure of the market (or lack of a market) in which the hydrocarbon / mineral is sold. They may differ according to perceived criticality, and be influenced by technological developments and political outcomes – all of which are part of the World Future Scenarios detailed in WP3.

An understanding of investment project risks is essential – the risk profile underpins government decisions on access to resources; the investment decision; the financing structure; the potential returns (including tax revenues); and the relative attractiveness of alternative projects.

The purpose of identifying risks and opportunities is to ensure that actors and policymakers can consider where the risk can be best – or most cheaply – borne, and whether the size of the risk can be mitigated. Mitigation of commercial risks is usually attained through contract, and mitigation of non-commercial risks may be achieved through allocation (of all or part) of the risk to the state or to state owned companies. Alternatively non-commercial risks may be tackled through policy and legislative measures.

Anyway, after identification of risks and opportunities, the implications of policy choices become clearer. It becomes possible to see whether government actions reduce specific risk, or mitigate, or eliminate, or actually increase the risk of an interruption or impairment of access to a natural resource.

## **2. Risk categories**

The discussion in the next four sections of this chapter divides risks in access to oil, gas and minerals into four broad categories –

- Volume
- Price / market / liquidity
- Non-substitution and (sometimes by way of mitigation) artificial substitution
- Political and legislative (which may cut across, or manifest themselves as, one of the three foregoing categories)

It is self-evident that a given event or circumstance may give rise to a risk in more than one category. In very broad terms, the categories are useful because the potential mitigation response across the category will be broadly similar – that is, risks in each category can be addressed in

approximately the same way. It is also likely that measures taken to address a particular risk will impact on other risks transpiring in the same category.

### **3. Volume**

These risks are concerned with sufficiency or shortage. This is essentially informed by the criticality analysis (see further WP2). Volume risks vary depending on location of deposits / reservoirs, and particularly with the means of transportation to the consumption site. Where there is an existing supply (transportation) route, it is perhaps easier to add additional volumes – particularly when compared to the challenges of setting up an initial route or pipeline. Fixed transportation links – wires and pipes – clearly present a greater challenge than routes where transport has more options (eg shipping routes) but consideration has to be given to the problems created by single export points and single import points.

Volume risks are the fundamental issue when considering security of supply. Security of supply is concerned with the delivery in the right place of the right volume which consumers want. (it is also concerned with price, considered below). That requires consideration of both the volume of the commodity, and the ability of the delivery route to deal with that volume once storage is taken into account. The most obvious example is gas – sufficient gas must be produced and transported to meet ongoing demand, given that only very limited quantities of gas can be stored (usually as line-pack), showing that security of supply risks exist beyond criticality or location reasons.

The issue of sufficiency can also overlap with the issue of substitution. At its most basic level, the question becomes “what ultimately matters” – in the case of rare earth minerals, the consumer cares about computers etc. An importing state has to ask whether it matters whether the raw material is imported and the computer built inside that state, or whether to import the finished computer from a state which produces the raw materials.

Security of supply tends to be the dominant issue when considering volume risks. Security is a function of confidence – where trade can be relied on, an importer no longer needs to seek confidence and control through ownership or direct access to the resource (an overlap with the third category below). With respect to volume, security concerns both whether a sufficient volume over time is available, and also whether that volume can be delivered. Storage has a key role to play in this respect, although clearly storage can be a limited solution particularly with respect to gas. Direct storage of electricity is impossible, although indirectly power can be stored in reservoirs at hydro generation sites. Storage of crude oil, oil products, coal, and other minerals is extremely common, the only real debate being over the size of the local store which will be required given that storage has a cost.

To gain greater confidence in trade tends to send risk averse countries and companies towards importing under a long term contract. The contract can directly deal with the volume risk, although there always remains the issue of enforcement of the contract. Long term contracts require flexibility built into the nomination and delivery requirements, to match variable demand and to minimise storage needs. That flexibility effectively decouples the timing of delivery from the timing of payment, creating a credit risk for the seller and obliging the buyer to take the risk of future demand forecasts being inaccurate. The long term contract has advantages to both parties, representing both security of supply and security of demand, but it has inherent credit and payment performance risks.

Long term contracts are designed to transfer a certain volume over the duration of the contract – and accordingly, there needs to be a method to determine the volume of each delivery. Nomination methods are designed to vary with the buyers onward demand level (consumer demand), with the consequence that the buyer is taking the risk that demand suddenly spikes. Contracts can try to take account of this and adjust nominations which are typically made a few days ahead of the delivery day, but the delivery obligations for additional commodity (especially gas and power) are typically less onerous meaning that there is no absolute contractual guarantee that the buyer will receive volume. It is a slightly different kind of volume risk from general security of supply.

Spot markets can help to address both the flexibility risk above, and also general security of supply volume risks. Spot markets take two different forms – there are true spot markets which are regulated entities with a centralised market maker, and there are (less regulated) over the counter markets. The key point for volume risk is not the nature of regulation, but rather whether there is sufficient confidence that the market will work. In gas, the world LNG (liquefied natural gas) market is properly described as a series of complex over the counter markets, but there would appear to be considerable confidence in its operation and its future ability to source and deliver cargos. Within many jurisdictions there are gas spot markets of varying degrees of reliability – the story of western European gas markets over the last twenty years is one of increasing reliance on a spot market. In that particular case, the level of confidence is a function of ability to import gas to meet demand.

Volume risks can be addressed in several ways. Most obviously the response of importers is to purchase on long term contracts, and attempt to match the short term demand level with the nomination mechanisms. Beyond that, volume risks can be addressed through substitution of the commodity. If there is a risk of power shortages, and not enough gas, then coal fired power might be brought online. That of course assumes that there is an excess of generation capacity and the ability to bring back unused power plants within the required notice period. Where criticality is particularly high, security of supply will tend to dictate that there is greater standby capacity to allow for such substitution.

Power can be generated from several sources, but in areas where there is less ability to substitute, criticality requirements will tend to dictate a greater need for storage, and long term substitution arrangements. That may mean importing the finished product not the critical mineral. It may mean paying higher prices. It may mean taking a look at ability to take physical access to the resource itself.

Physical access to the resource itself, as far as an importer is concerned, classically takes two forms. The first is the long term purchase contract outlined above, which puts the producer and the importer into a position where they are heavily dependent on each other. The importer needs the commodity. The exporter needs the cash. The greater the mutual dependence, the more

likely the contract is to deliver security (of both supply and demand). Where there are significant outside pressures (see e.g. section 6 on political risks below) on the contract, there remains a risk. That risk is why importing states may seek direct ownership of the resource, an approach which also reduces the risk that one side may try to escape from the contract. Direct ownership effectively puts the importer on both sides of the contract – it is an internal arrangement not a true arms length deal. But direct ownership is not foolproof – an exporting state can still control depletion rates; it can still take away the property right (nationalisation); and it can still consider other export and trade controls.

Direct ownership is a common model throughout history, although diminishes considerably in the last thirty to forty years, particularly in the oil industry since the creation of OPEC. It is making something of a comeback with the investments by state companies outside their own jurisdiction. Coupled with political power of investing governments, it can appear to be a powerful tool to improve security of supply. It however has clear legal limitations, and it remains to be seen whether the political power of importing governments can always overcome that.

#### **4. Price, market and liquidity**

The key to dealing with price risks is usually to understand change of price for the given commodity over time – whether that is in the spot trading environment or future volumes under contract. The risk is less concerned with the “starting” price, and more concerned with the future variation in that price. Producers are concerned with the potential for a price collapse, whilst consumers are concerned with the potential for higher prices. As supply and demand within the market (even a regulated environment) will change over time, the price is likely to change. The goal of long term fixed price (or formula linked) contracts is to isolate the transaction from the variations of price. How far that works will largely depend on the ability to create substitution arrangements.

The initial price negotiation is essentially a yes / no decision on purchase. If the buyer can't afford the initial price, he simply doesn't get the contract. There are numerous examples in the

world today particularly in oil, where there are countless poorer countries which cannot afford to import the volumes of oil which they might otherwise wish. There is a clear link to affordability on the part of the ultimate consumers. That affordability may change over time – there is no guarantee that just because a commodity is affordable today, the same volume will be affordable tomorrow. Oil again is the classic example, although critical minerals pricing can also be volatile. Where a country cannot afford to keep pace with world price rises, there is a serious problem for volume delivery, and therefore security of supply.

Affordability is a key consideration in this category. The debate over affordability is strongly linked to the subsidy debate, but at its simplest, affordability is the driving force behind price regulation. Price regulation attempts to force out supernormal profit, by linking the regulated price to the cost of production. In very simple terms, price regulation seeks to avoid the situation seen in the oil market in the recent past, where the price of a barrel far exceeds the average cost of production. In domestic gas markets, governments frequently seek to control (regulate) the gas price so that equivalent differentials cannot appear. There are obvious knock-on effects on attractiveness of investment opportunities, and ability to recover costs of existing investments.

The problem with price regulation as an approach to deal with affordability is that it only works within a single jurisdiction. There is no obligation on exporters to follow regulation driven by the importer. If the exporter is happy with the “low” price, then there is no problem. But if the exporter is not happy to take the “low” regulated price, then there is nothing the importer can do to force him to sell commodity at that price. There is no such thing in international law as an obligation to produce – a state can validly elect to leave resources in the ground – and there is no such thing as an obligation to export. The world would be a very different place if such obligations were created in the future, but that would require exporters to subject themselves to treaty obligations.

It therefore tends to be quite easy to regulate power prices; although where fuel is imported it is obviously more difficult and will tend to drive generators towards domestic fuel sources. That might have effects which are undesirable – e.g. local source is coal which has high emissions

levels. To reduce emissions, the state seeks to import gas... but if the gas price rises, it has a problem with affordability and pressure to go back to coal.

Price risks and volume risks collide with respect to security of supply. In an unrestricted market, volume is allocated to those able to pay the price. If production (supply) falls, price rises to choke off demand.

That will happen over the long term with respect to contracts, and in the short term in a spot market. There is always an issue where spot prices diverge from long term prices – this has been a frequent issue in the copper market over the years. Oil markets have largely escaped the problem by defining it out – the long term price is strongly related to the spot price through the use of reference prices to marker crudes. Where there is less direct linkage, the differences between the spot price and the contract price can cause serious problems. Gas liberalisation in the United Kingdom is a classic example, where the spot price crashed shortly after liberalisation due to a production bubble (excess). The long term contract price, unrelated to the spot price, looked high, creating a powerful desire to get out of contracts and buy gas in the spot market instead. For sellers committed under long term contracts, volumes fell to minimum levels. Contracts can be designed such that those minimum levels lead to sufficient income for the producer, but in the UK case the former monopolist came under tremendous financial pressure. Similar problems abound for high cost generators in power markets which are gradually made more liberalised as a result of regulation – the high cost producer (often a nuclear generator) is pushed out the market. The result is that spot markets created as markets become more liberalised tend to be highly regulated affairs.

Further risks in this category relate to market abuse. Anything which can adversely influence the outcome of the market mechanism is a problem – including insider trading, market manipulation and cartels. The regulatory response to the problem is usually to require transparency by the participants, ban the offending behaviour, take investigative powers by the government, and penalise any offending behaviour through criminal sanctions. Competition depends on the successful operation of markets. Anything which damages the operation of a market tends to cause a less competitive outcome.

Liberalisation of markets where there was a capacity excess – eg European gas and power markets – has been driven by a desire to see lower prices as a result of gas on gas (power on power) competition. In that respect the markets have been highly successful, at least until very recently. The potential problem is that the markets have not delivered all of the requirements of energy policy. Energy policy is about more than just price. It is about security, diversity, and long term price as well as prices in the short term. Where the market is solely focussed on price, it runs the risk that producers / generators will focus on the cheapest source. Highly liberalised markets may not deliver diversity, and may create higher security risks over time. Again that is dependent on a view of affordability – there is no doubt that markets will meet demand if it is paid for. The question is what happens when there is a constraint on consumer ability to pay. The oil market is very clear – if a buyer can afford a barrel, he can have it. The power market is less clear – governments do not always want power prices to rise beyond politically acceptable levels.

Competition law is an essential element in markets. It must ensure that participation is equal – not only in terms of information, but in ability to compete. Where there is a natural monopoly – pipes, wires, terminals etc – regulation is focussed on ensuring that the monopolist cannot abuse that position. Dominance in a market is not necessarily a problem. Abuse of that dominant position is the problem. That is generally recognised by competition law.

The category is fundamentally concerned with market failure – a situation where the market fails to deliver the desired policy goal, and regulatory intervention is required to ensure that the desired outcome emerges.

## **5. Non substitutability and artificial substitution**

Import dependence is affected by the ability (and desire / will) to substitute the resource or commodity, or reduce demand. Risk mitigation is found in any method to encourage substitution or lower demand, including a change of the appliance stock enabling a different resource to be used to satisfy the consumer. Energy efficiency measures and financial support for renewable

energy sources are key examples (in the case of access to hydrocarbon resources) of policy responses relevant to this risk category.

Import dependence is not a new issue. The approach of importers has classically been to try to create a position where the exporter is also dependent, most obviously on the cash flow. This approach underpins significant investment in gas, coal, and minerals. The producer will not build without the certainty of demand of a particular buyer. It perhaps sees its logical extreme in the uranium market (there is no spot market for uranium). There is no doubt that the approach has largely worked, but it has no absolute legal guarantee. Producers are still sovereign. Contracts which are broken will result in monetary damages, not a future delivery of commodity. Receiving cash is not always good enough for importers – it will work if the commodity and cash are equivalent (the rational underpinning spot markets), but it will not work if there is no availability of equivalent commodity. Oil and cash are probably equivalent – a barrel can always be turned into cash and vice versa – but that is not so obviously true of most other commodities.

The category is already under discussion in relation to trade law. Trade law is concerned with the removal of impediments to cross border access to markets. With the growing importance of the World Trade Organisation (WTO), there can be little doubt that trade law is playing a greater role than ever before. The WTO system is highly legalistic and focussed on creating a strong incentive to remove barriers, through sanctions in events of barriers being created (or not removed) in breach of international obligations. Where a country has an obligation to open a market to foreign investment but puts obstacles in the way of investors, a complaint can be brought before the Panel. Adverse Panel judgements (which can be appealed) result in sanction on the offender. The system has an extremely powerful enforcement mechanism – a classic failing of many international bodies and organisations but not of the WTO.

Substitution of commodities can be direct – eg a new source of gas for a lost source of gas. It can also be artificial, in the form of reduced demand, increased efficiency, and use of a different commodity instead. The key to that choice will be affordability. It is striking that over the years much emphasis has been put on the world's need to increase energy efficiency, but the primary

focus is often on increasing production levels. There have been very few serious step changes in energy efficiency shown in history, which is a particular concern given that many governments driving towards greater use of (expensive) renewables are also assuming large gains in efficiency to maintain security of supply. See further WP2 in relation to critical minerals.

## **6. Political risks**

There is obvious overlap here with all of the other categories – they are not intended to be unique. Political risks include unilateral adjustment of original terms of access to oil / gas / minerals; unilateral change of the investment terms (including expropriation); dealing with problems in the state's capacity or understanding or knowledge (particularly in emerging markets and frontier producing provinces); and strategic foreign policy influences on access to hydrocarbons and minerals – banning foreign investment, requiring domestic involvement; and allowing foreign policy to influence commodity export volumes or prices.

Political risks are an extremely broad category. In this context, perhaps the most extreme form of political risk relates to adjustment to the existing terms of access. The key point is that governments are sovereign so cannot be absolutely prevented from making such decisions. The structure of risk control is not about bans, it is about creating a consequence for such decisions that will give incentives not to take such actions. The fundamental starting point is concerned with the legitimate expectations of the parties. This is not a simple concept – establishing exactly what the investor's legitimate expectations covers is complex. It relates to future expectations as affected by the tax system. Imagine an oil investment is made at \$100 barrel. The future oil price rises to \$120. Is it a legitimate expectation of the investor that he receive all of this gain? If the government seeks to argue that the investor has a fixed expectation, what happens if the price falls? Given that the sovereign has the right to adjust tax regimes, what is the legitimate expectation for sharing any gain or loss? There are equivalent issues for volume etc.

What most investment contracts seek to do is permit the investor to sue the government in event of a change to legitimate expectations, for the loss of value. Most will create some form of

investment arbitration rather than a court process. The result is that there is a cost to government in making a decision to expropriate in whole or in part, or to make a tax change which affects the fundamental economic bargain, or to adjust any other term affecting that fundamental bargain. There is therefore some recompense for exposure to the political risks.

Political risks also exist in the creation of markets within given jurisdictions. The market rules are fundamentally set by government. There is always a problem where the government seeks to make private investors compete with state owned companies. The rules have to be set such that state companies do not have an inbuilt advantage over non state actors. There are numerous ways in which benefit might arise, which makes regulation extremely complicated. Occasionally the rules are set such that the state / non state actors simply do not compete with each other, which is both a structurally difficult position to achieve and also an admission that the market is not wholly competitive. Most regulated markets do not seek full competition anyway – eg power markets do not normally expect high cost renewables to compete in the same way as other sources.

There is a further political risk in the form of state capacity and understanding. Too many states simply do not have the expertise to enable them to gain data and interpret data to create the rules to achieve what they want to do. Various international organisations have programmes to help, but training a government to deal with experienced private investors in detailed negotiations is a more common problem than it might first appear. Most governments have found that in negotiation with a private investor there is a fundamental problem – the government is on the wrong side of the information asymmetry with respect to costs. The only party who knows what the cost will be is the investor. Perhaps the best way round the problem is for the government not to care – in other words, to tender projects on basis of price rather than to seek to control investment levels directly. Provided there is sufficient competition, there should be a competitive result in entry to the market. It can be hard to get sufficient competition, and it can result in a situation where there is competitive entry, but not competition after that point. Each successful investor effectively is guaranteed his market share (or at least a certain volume).

A more recent political risk development concerns strategic foreign policy influences. A state company which invests in another jurisdiction may seek benefit from its owner government's ability to influence the host state. It may get a better deal; it may be able to adjust a "bad" deal; it may be able to get preferential treatment compared to other investors. This is a serious concern where host states become heavily dependent on another state – e.g. in return for allowing investment by its state companies, the owner state will provide infrastructure (roads, railways etc.) With that level of dependence comes the risk that the owner state will seek to get better deals over time.

Domestic requirements can also form a political risk – whether these are changes in the law (eg environmental changes; tax changes); or domestic work quotas imposed or changing over time; or fundamental changes like the establishment of a special case for domestic markets. Many oil producers must supply crude to the local market at regulated price, and such obligations are becoming more common in gas too. Such obligations are readily compatible with sovereign entitlement. The problem is not so much in their establishment (although they create distortions of the local market) but in their change over time, affecting the legitimate expectations of the investor.

Political risks also include state ability to dictate export volumes or prices. Volume controls are common – it is for example the basis of OPEC control. Restricting export volumes for political reasons, or even being accused of it, is perhaps a growing risk for international trade. Commodity producers may be seeking to use their control to gain greater influence in other spheres too. It is not an uncommon allegation in oil, minerals, or even gas.

## **7. Final comments**

The specific choke points where risks arise – for example, import and export decisions; approvals of long term contracts; building of infrastructure sufficient to meet demand - are obvious targets for policy attention in the broad sense. The more difficult challenge may be to identify the specific target for reform or adjustment, and crucially its place in the overall shape of relevant international relations (including mechanisms to set market norms or determine

contractual standards) and national politics. The legal implementation is likely to be complicated – perhaps necessitating carrying through policy issues right through to detailed regulatory reform addressing investment project obligations or changing arbitration or credit terms, for example. But whatever such implementation challenges may be, we are sure they will be more easily overcome in an economic environment where actors from varying countries and different ends of the supply chain can share commercial objectives, make use of the same contractual and technical standards, and where especially they establish a common interest in the proper functioning of the relevant commodity market. We will look at opportunities in this respect in Part D of WP4 and in Chapter 6 of WP5.